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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/605,746 | 10/23/2003 | Chun-Ming Hsu | PMXP0174USA | 2745 |
| 27765 | 7590 | 05/07/2007 | | |
| NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116 | | | EXAMINER DALEY, CLIFTON G | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2609 | |
| | | | NOTIFICATION DATE | DELIVERY MODE |
| | | | 05/07/2007 | ELECTRONIC |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| Office Action Summary | Application No. 10/605,746 | Applicant(s) HSU ET AL. | |
| | Examiner Clifton G. Daley | Art Unit 2609 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al. (hereinafter "Kawakami"; US 6118928) in view of Reed et al. (hereinafter "Reed"; US 6351493).

Regarding claim 1, Kawakami teaches a method of compressing a sequence of video frames, video frames comprising blocks of picture information; types of video frames being: an I-frame having blocks encoded referencing intra-picture information only, a P-frame having blocks encoded referencing intra-picture or inter-picture information, and a B-frame having blocks encoded referencing inter-picture information only (column 1, lines 51-56); the method comprising: (a) providing a predetermined sequence of video frames, the predetermined sequence beginning with an I-frame and ending with a P-frame (Fig. 2, First sequence of video frames (i.e. GOP structure), where $N1=7$ for example); (b) sequentially encoding frames by encoding blocks of each frame according to the frame type (column 5, lines 51-54); (c) determining a scene change (i.e. Fig. 8, entry point assigning signal 82); and (d) when detecting a scene

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change in a P-frame (Fig. 2, I1, i.e. scene change, occurs at a P frame), redefining that P-frame as an I-frame and redefining B-frames of the sequence as P-frames (Fig.2, second GOP structure), and re-encoding redefined frames (column 5, lines 51-54).

Kawakami does not teach an automated method of determining a scene change.

However Reed teaches determining a number of intra-picture encoded blocks in a P-frame, and determining a scene change as occurring when the number of intra-picture encoded blocks is greater than a predetermined number (column 3, lines 17-25 and 31-33).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Kawakami's scene change determining method with Reed's scene change determining method. The motivation to combine being that Reed's scene change determining method is a fast and efficient method for detecting scene changes in a P-Frame.

Regarding claim 3, Kawakami teaches the limitation wherein the predetermined sequence (i.e. GOP structure) consists of an I-frame, a subsequent series of B-frames, and a final P-frame (Fig 1. with $M1 > 0$ and $N1 = M1 + 1$).

Regarding claim 4, Reed teaches the limitation wherein in step (c), the number of intra-picture encoded blocks is maintained and compared to the predetermined number while encoding the P-frame (Fig. 2)

Regarding claim 5, Kawakami discloses a step (d) wherein all B-frames of the sequence are redefined as P-Frames (Fig.2, second sequence (i.e. GOP structure)).

Regarding claim 6, Reed discloses the limitation wherein the sequence of video frames and encoding of the video frames are according to MPEG-4 (column 4, lines 38-40).

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami and Reed as applied to claim 1 above, and further in view of Falkemeier et al. (Proceedings of the IASTED International Conference, Internet and Multimedia Systems and Applications, October 18-21, 1999, pages 11-15).

Kawakami as modified by Reed does not teach the limitation of repeating steps (b) (c) and (d) of claim 1.

However Falkemeier et al. discloses an iterative approach to detecting scene changes, including analysis of P-frames (Section 2 and 2.1)

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have repeated steps (b) (c) and (d) for all new P-Frames generated in a previous execution of step (d). The motivation to combine being to determine the exact scene change (i.e. cut) position in a fast, accurate and complete manner (Falkemeier, Section 2).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kelly et al., "Virtual Editing of MPEG-2 Streams", November 2001, IEEE Transactions on Consumer Electronics, Volume 47, Issue 4, pages 797-803, discloses re-coding to accommodate a scene change. Boice et al. (US 5978029) and

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Matsuzaki et al. (US 6907069) disclose scene change detection, and change of coding mode and recoding to accommodate the scene change. Kuchibhotla (US 5724100) discloses scene change detection by threshold comparison of intra-picture macro-block count while processing a picture.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clifton G. Daley whose telephone number is 571-270-3144. The examiner can normally be reached on Monday - Friday 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexander Eisen can be reached on 571-272-7687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Alexander Eisen
SPE
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